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STRETCHER

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2 Sheets-Sheet 1

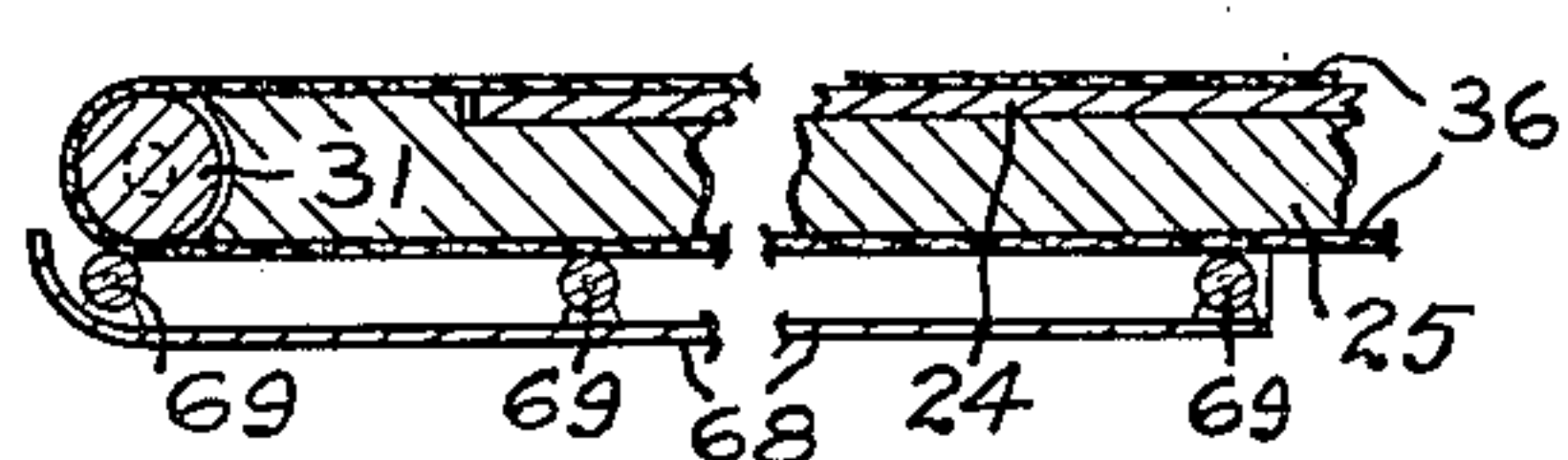


Fig. 13

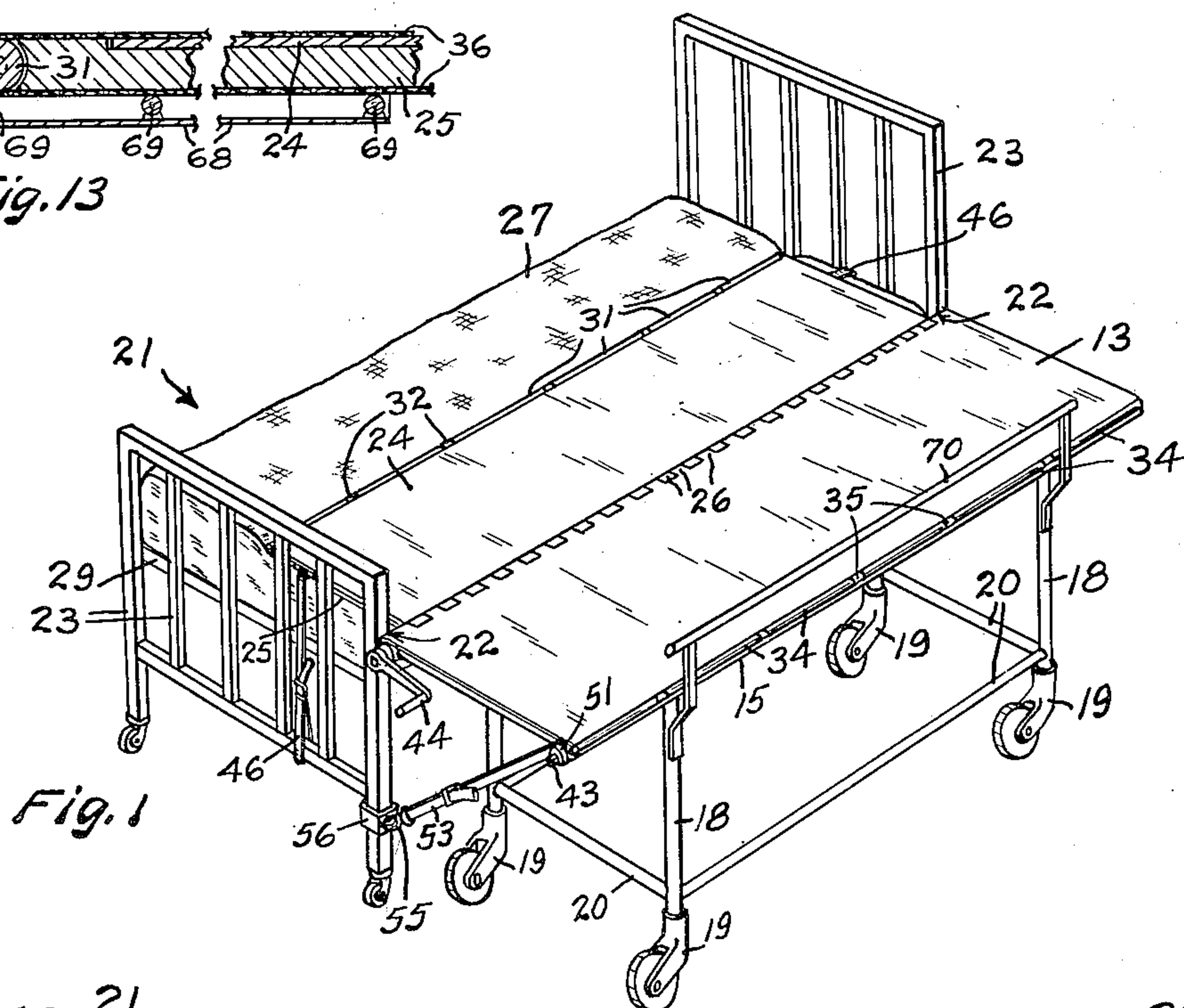


Fig. 1

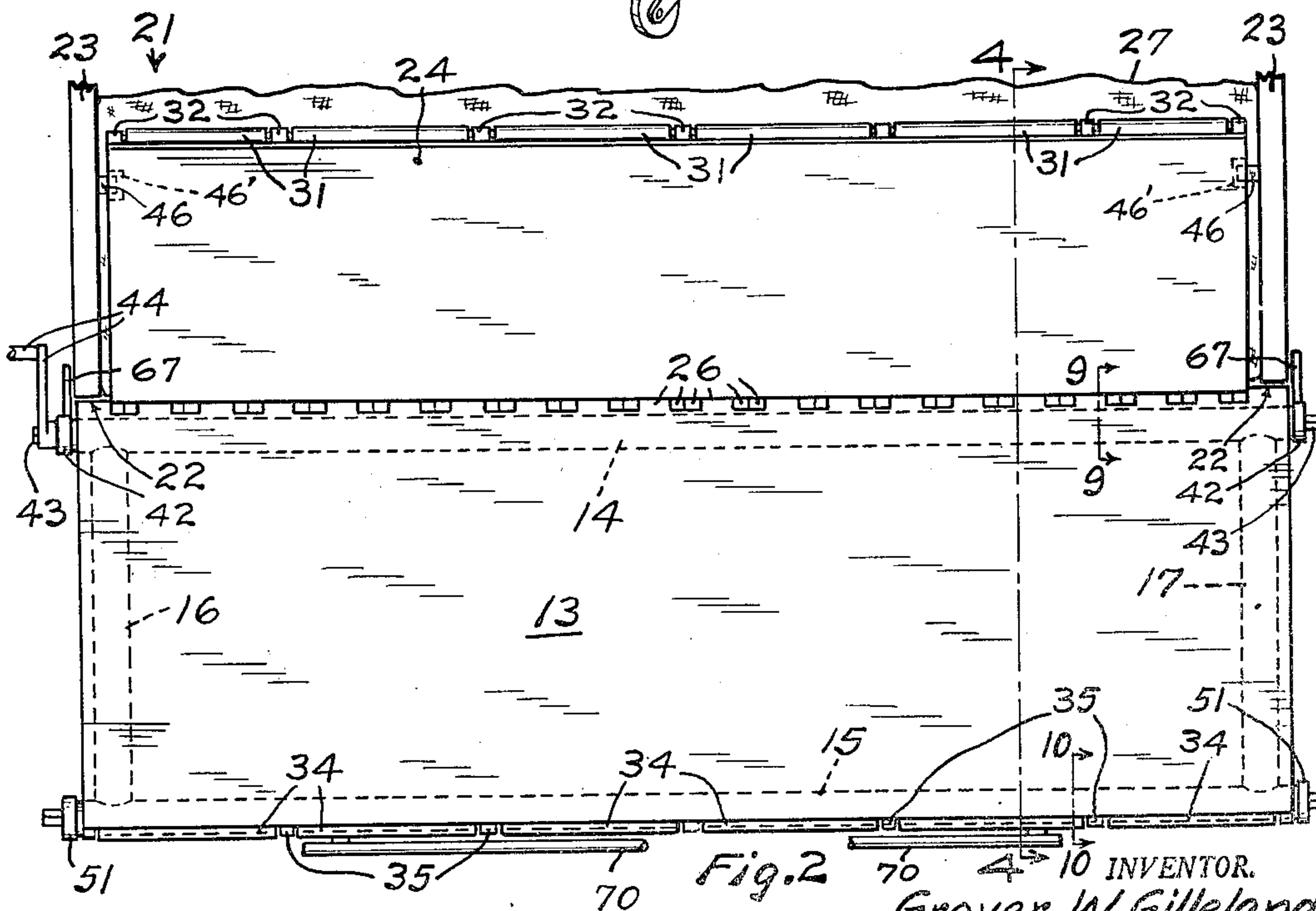


Fig. 2

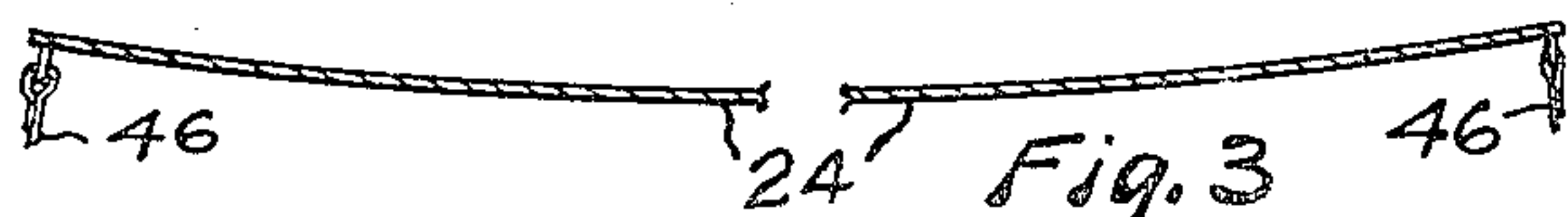
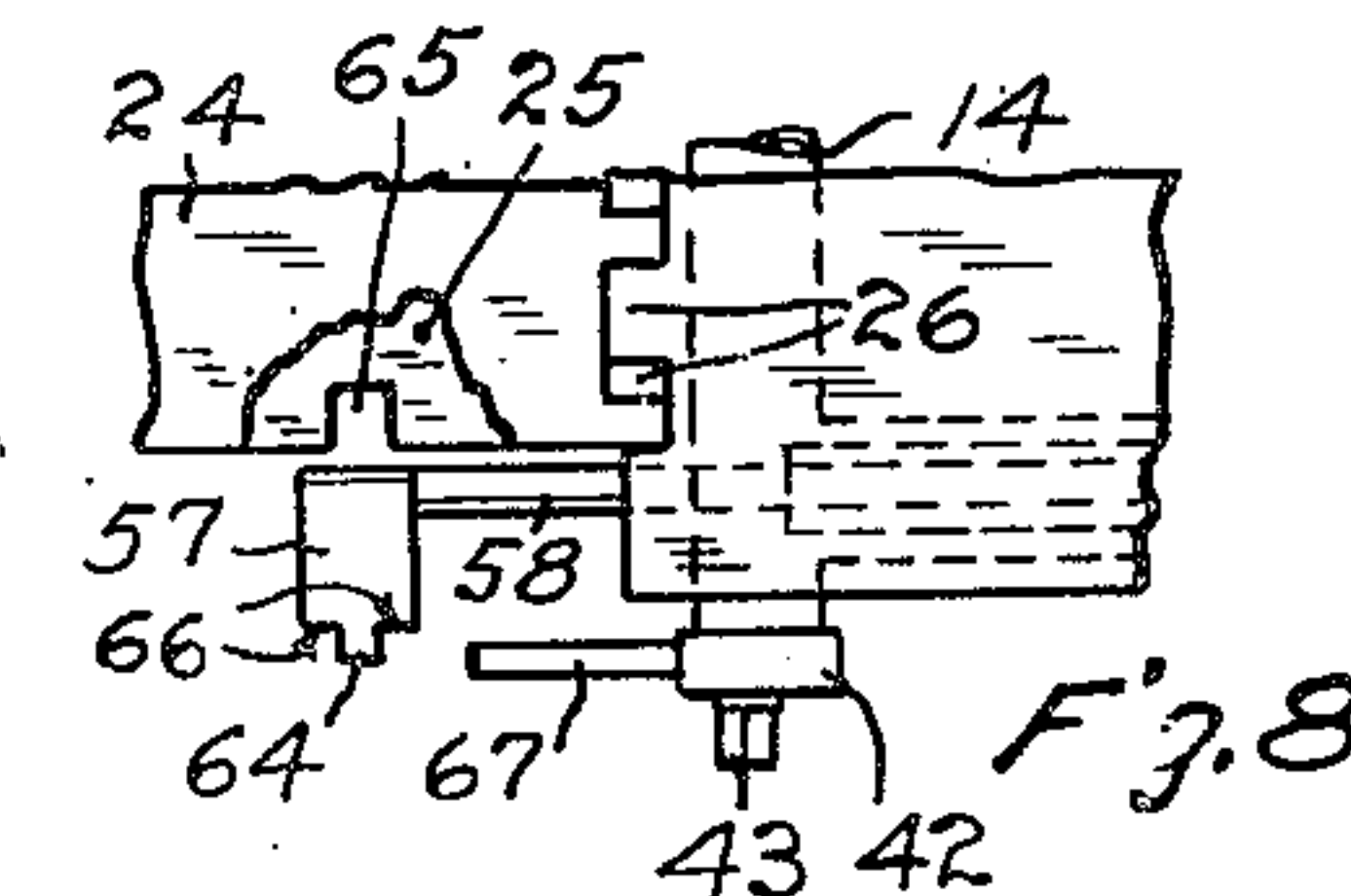
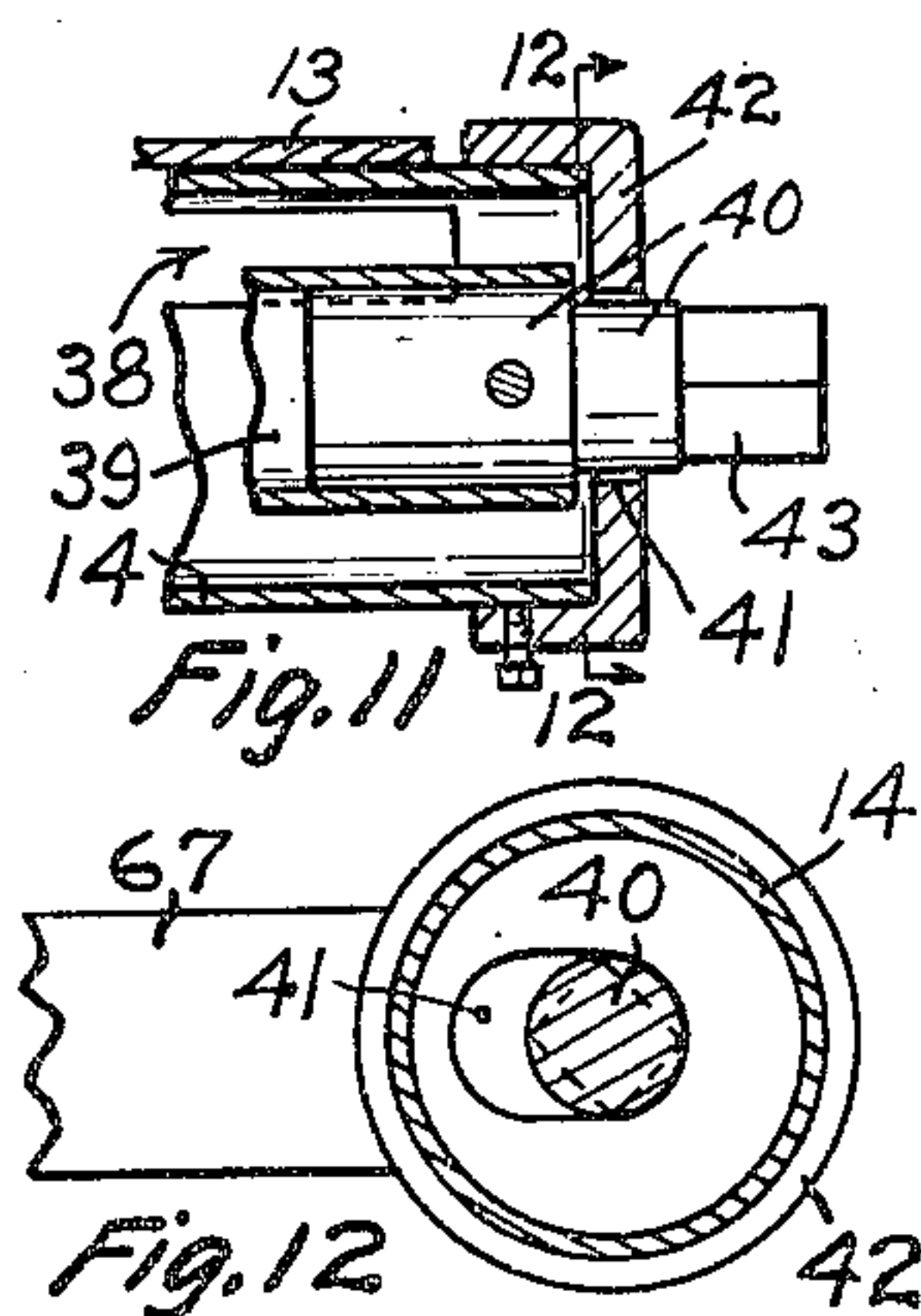
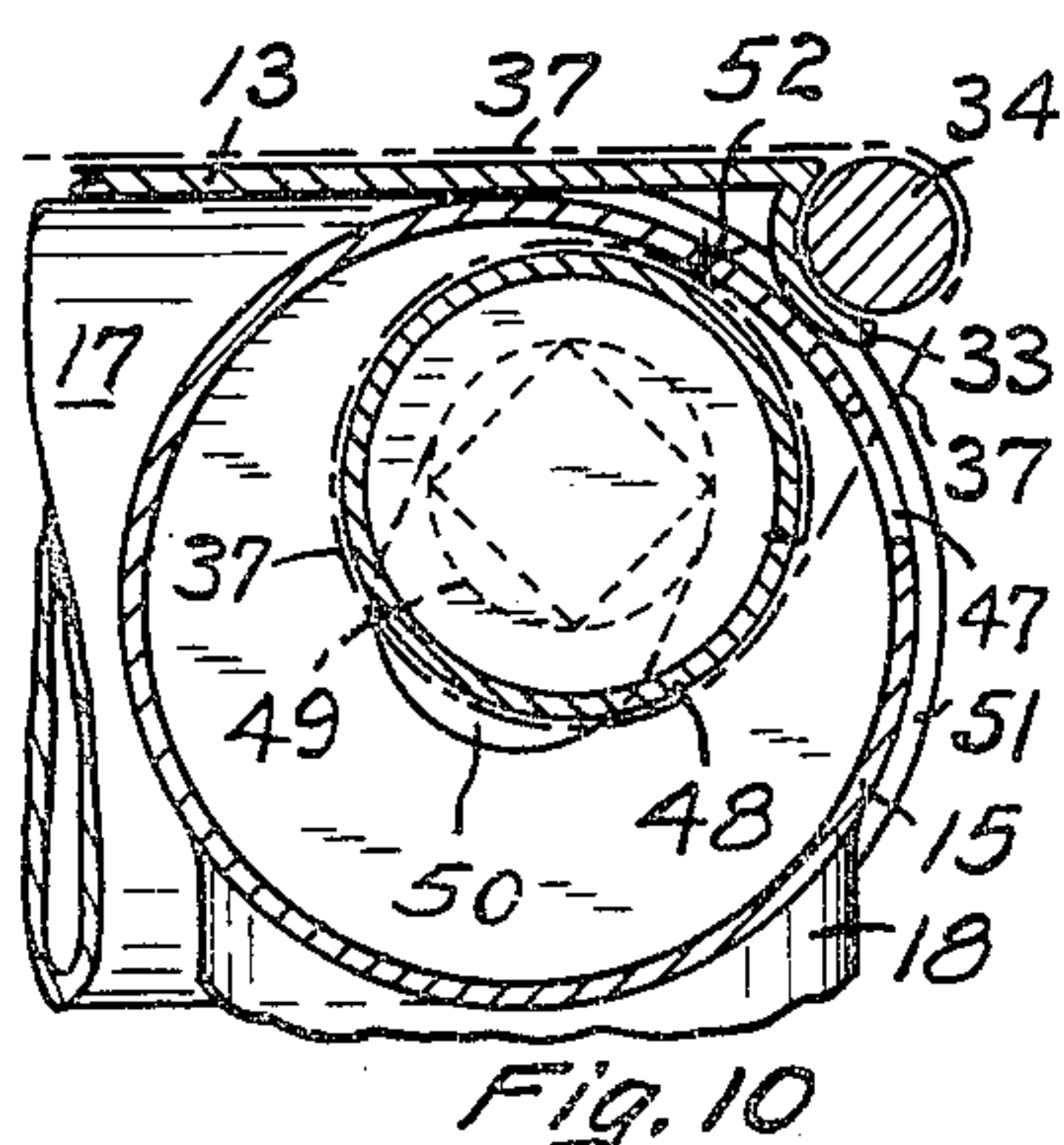
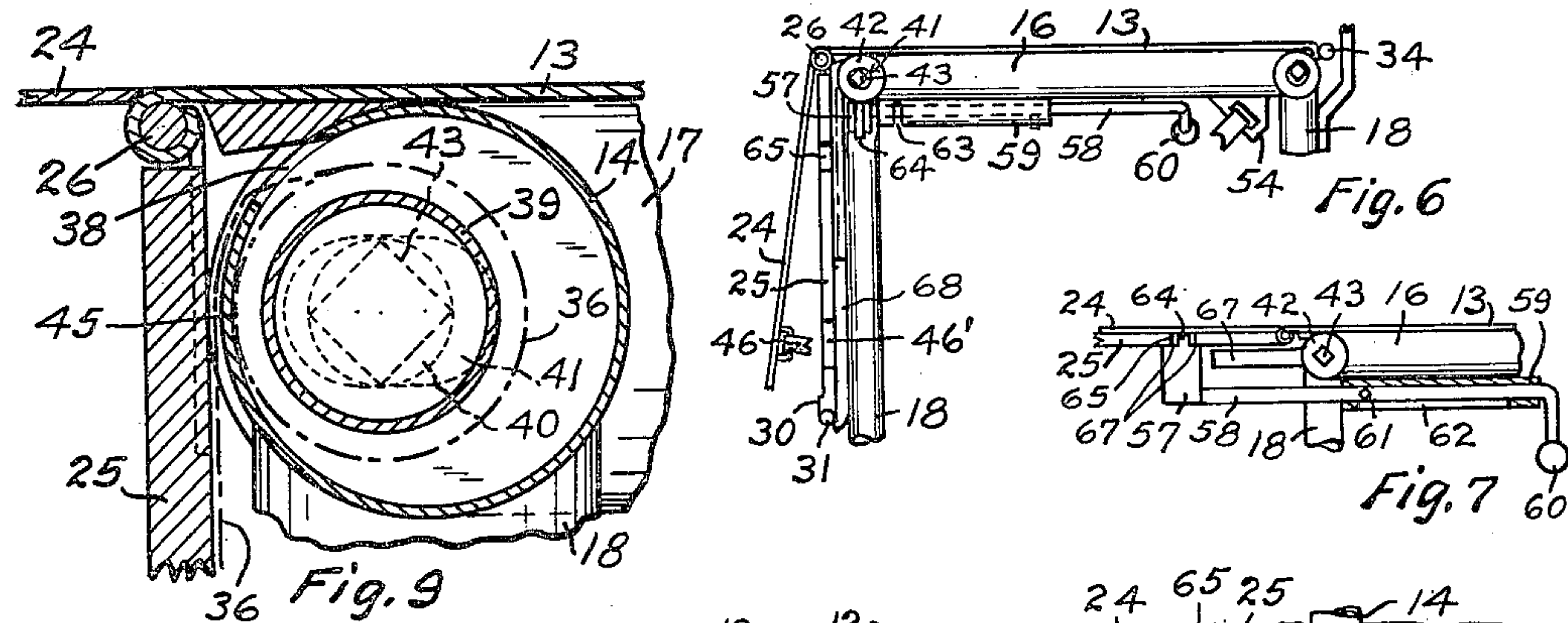
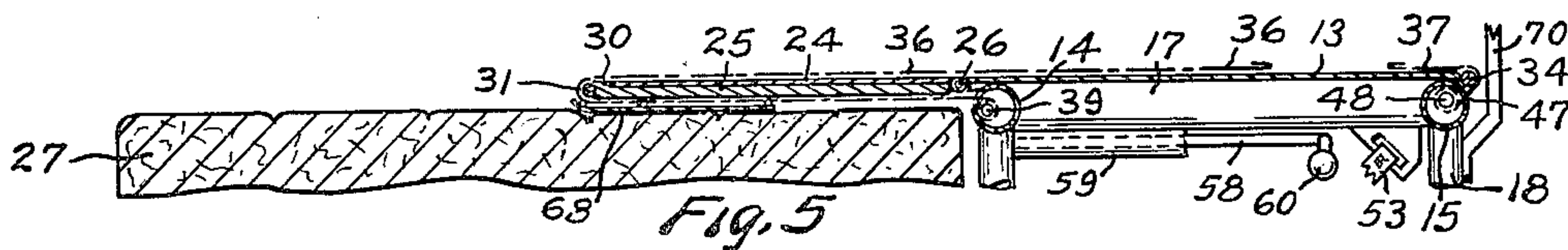
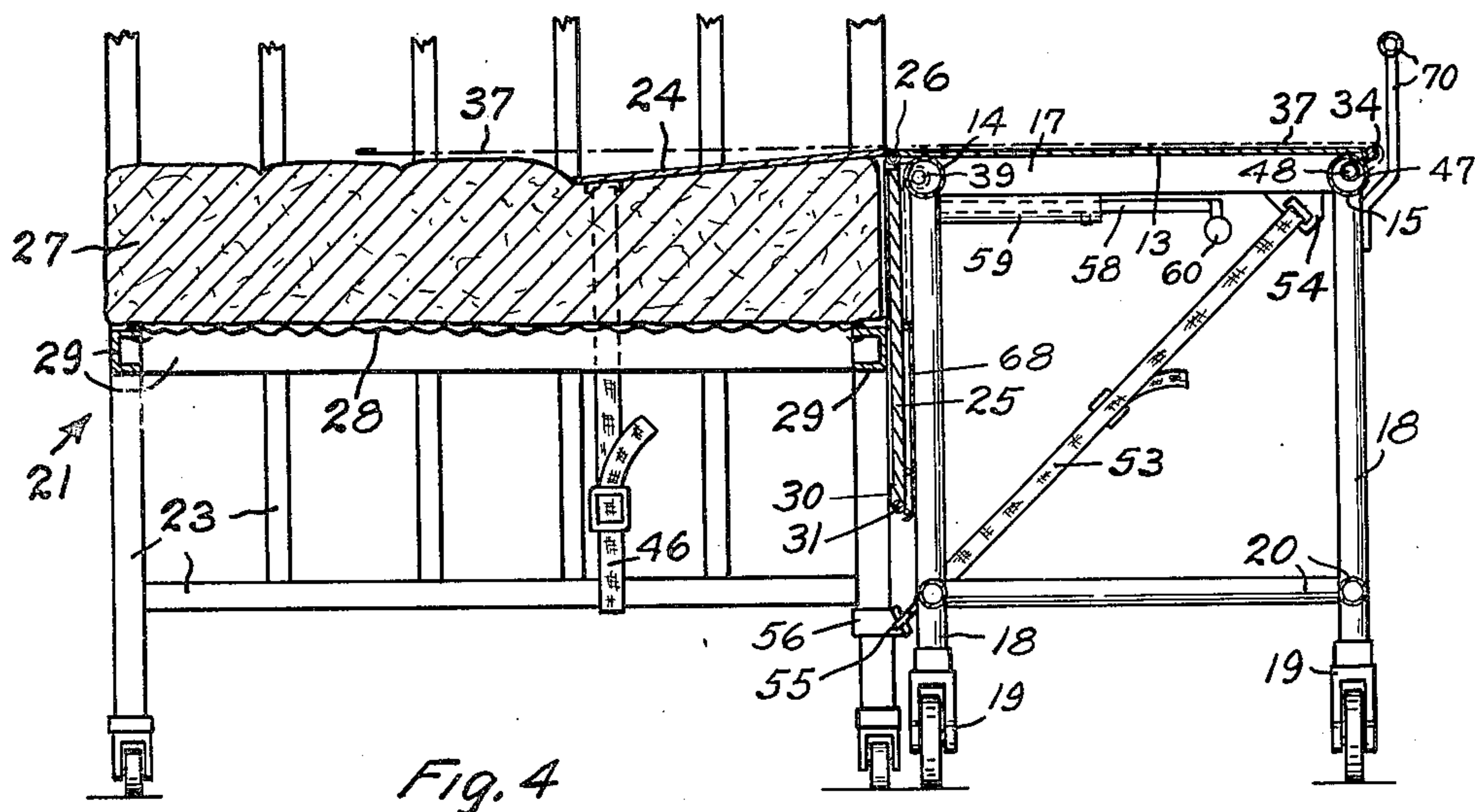


Fig. 3

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2 Sheets-Sheet 2



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STRETCHER

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14 Claims. (Cl. 5—86)

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This invention relates to a wheeled stretcher and an object of this invention is to provide a wheeled stretcher having efficient means for transferring a patient between the table of the stretcher and another support, such as a bed or an operating table, with the least possible discomfort to the patient and with a minimum of effort on the part of the person or persons handling the patient, it being relatively easy for one person, using this apparatus, to transfer a patient between the stretcher table and another support.

In transferring a patient from a bed or operating table to a wheeled stretcher or from a wheeled stretcher to a bed or operating table, it is common practice either to roll the patient from one support onto the other or for two or more persons to insert their arms under the patient and lift the patient from one support to another. The method of transfer by rolling from one support to another is objectionable because the two supports are liable to be at different elevations and the patient is liable to be roughly handled in getting him from one support onto the other. The method of transfer by lifting necessitates supporting the body of the patient at spaced intervals and leaving the patient's body free to bend and sag between the locations at which it is supported. Each of the methods of transfer above described is liable to subject the patient to needless discomfort and suffering and can result in serious injury to the patient.

It is an object of this invention to provide simple and efficient means for moving a patient between the table of a wheeled stretcher and another support, such as a bed or operating table, without bending or flexing any part of the patient's body and without subjecting any part of his body to excessive pressure.

Another object of this invention is to provide transfer means of this nature which will obviate substantially all danger of dropping a patient in transferring him to or from a wheeled stretcher.

Another object is to provide a wheeled stretcher having means associated therewith by which a patient can be very easily moved onto and off of the table of the stretcher without lifting the patient, it being possible for one or more persons who are not capable of lifting the patient to easily transfer him with this apparatus.

Another object of this invention is to provide a wheeled stretcher provided with a table and having transfer leaf means hinged to one edge portion of said table and having means for mov-

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ing a patient over said transfer leaf means onto and off of said stretcher table.

Another object of this invention is to provide a wheeled stretcher having patient transferring means including a flexible and a non-flexible transfer leaf hinged to one edge portion of the stretcher table and having two pliable transfer members arranged to be moved in opposite directions across said table and said transfer leaf means to move a patient onto or off of said table.

The foregoing objects of this invention, together with others inherent in the same, are attained by the devices illustrated in the accompanying drawings, throughout which like reference numerals indicate like parts.

In the drawings, Figure 1 is a perspective view of a wheeled stretcher constructed in accordance with this invention showing the same alongside of a hospital bed in a position in which it would be placed preparatory to transferring a patient from the bed to the stretcher or from the stretcher to the bed;

Figure 2 is a plan view on a larger scale than Fig. 1 showing the stretcher in operative relation to the bed, a portion of the bed being broken away;

Figure 3 is a view in longitudinal section of a flexible top leaf member illustrating the normal curvature of said top leaf member;

Figure 4 is a view of the bed and stretcher taken substantially on broken line 4—4 of Fig. 2 and showing by dot and dash lines a transfer canvas spread across the bed and stretcher in a position in which it can be placed preparatory to transferring a patient from the bed to the stretcher;

Figure 5 is a fragmentary view similar to Fig. 4 showing both leaves of the stretcher extended above the bed and showing by dot and dash lines another transfer canvas in the position it can occupy preparatory to transferring a patient from the stretcher to the bed;

Figure 6 is a fragmentary view partly in section and partly in elevation showing the stretcher with both leaves thereof folded;

Figure 7 is a fragmentary view similar to Fig. 6 but showing both leaves of the stretcher supported in an extended position;

Figure 8 is a fragmentary plan view of the parts shown in Fig. 7, with a portion of the top leaf broken away and a leaf supporting member shown in a different position;

Figure 9 is a fragmentary sectional view, on a larger scale than Fig. 2 and taken substantially on broken line 9—9 of Fig. 2, showing parts of

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the hinge structure for the leaves and showing a tubular frame member having a tubular roller therein whereon a transfer canvas is wound;

Figure 10 is a fragmentary sectional view, on a larger scale than Fig. 2, taken substantially on broken line 10—10 of Fig. 2 and showing another tubular frame member and canvas receiving roller;

Figure 11 is a longitudinal vertical sectional view on a smaller scale than Fig. 9 showing an end portion of the tubular members shown in Fig. 9;

Figure 12 is a sectional view taken substantially on broken line 12—12 of Fig. 11; and

Figure 13 is a fragmentary sectional view showing the outer edge portion of a non-flexible leaf member and showing shield means on the bottom side of said leaf member for shielding a pliable transfer member that passes under said leaf, the pliable transfer member being shown by full lines in said Fig. 13.

In the drawings 13 is a stretcher table, 14 and 15 are two tubular frame members supporting the respective edge portions of the table 13. 16 and 17 are two transverse frame members extending between the frame members 14 and 15. The frame members 14, 15, 16 and 17 cooperate to form a rectangular frame that is supported by upright leg members 18. Each leg member 18 is provided with a caster type wheel 19. Preferably the two wheels 19 at one end of the stretcher frame are of a type that can be locked against caster movement. Suitable truss members 20 are provided between the several leg members 18.

The table 13 and the frame members 14 and 15 are herein illustrated as being slightly longer than the usual hospital bed 21. This provides means, such as the edge portions 22 of the table 13, which can abut against the two end frames 23 of the bed when the stretcher is in the position shown in Figs. 1 and 2. Obviously the length of the table 13 and frame members 14 and 15 can be varied within reasonable limits as long as means are provided on the stretcher for abutting against a suitable portion of the bed frame.

Two leaf members or transfer leaves 24 and 25, which may be of any desired width, are pivotally connected with one edge portion of the table by common hinge means 26, (see Fig. 6). The uppermost leaf member 24 is of relatively thin flexible material. The outermost edge portion of said flexible leaf member 24 is concavoconvexly curved or bowed in longitudinal directions and has its convex side downwardly directed. When this flexible leaf member 24 is in use, as shown in Fig. 4, and the leaf 25 is hanging vertically, then the convex side of the flexible leaf 24 will rest on the mattress 27 or on the bedding that covers said mattress, as hereinafter explained. 28 indicates a bed spring carried by bed frame means 29 and supporting the mattress 27.

The leaf member 25 is substantially non-flexible and is wider than the flexible leaf member 24 and the outer edge portion of said non-flexible leaf member 25 has a raised portion on the top side, as indicated at 30 (see Fig. 6), so that when the top leaf member 24 rests on the bottom leaf member 25, see Fig. 5, a flush top surface will be presented.

The bottom leaf member 25 has a plurality of anti-friction rollers 31 rotatively mounted in its

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outer edge portion, as in bearing brackets 32 (see Fig. 2).

The edge portion of the table 13 furthest from bed 21 is provided with a concavely bent portion 33, Fig. 10, within which anti-friction rollers 34 are disposed. Bearing members 35, Fig. 2, rotatively support the rollers 34.

The two leaf members 24 and 25 serve as means over which a patient can be slidably moved between the table 13 and any other support, such as an operating table or the bed 21. The means for thus slidably moving a patient comprises two pliable transfer members 36 and 37. These pliable transfer members are shown by dot and dash lines in Figs. 4, 5, 9 and 10. Preferably these transfer members are made of strong and substantial canvas or like material.

The pliable transfer member 36 is used for transferring a patient from the table 13 to another support, such as the bed 21. This pliable transfer member 36, Fig. 9, extends through a slot 38 in the tubular frame member 14 and is secured to a winding roller 39 which is disposed within said tubular frame member 14. The winding roller 39 has a bearing member 40 in each end thereof, see Figs. 11 and 12. Each bearing member 40 extends outwardly through a radial slot 41 in a cap 42 on the end portion of the tubular member 14. Each bearing member 40 terminates in an outer end portion 43 that is suitably shaped so that a crank 44 can be applied to the member 43 at either end of the roller 39 for turning the roller 39. The slots 38 allow the roller 39 to float radially of the tube 14 and the pliable transfer member or canvas 36 that is secured to and wound on the roller 39 bears against the inside surface of the tube 14 along a line indicated by numeral 45, Fig. 9. This makes it possible to use a roller 39 of relatively light weight because the pull of the canvas 36 is exerted directly against the tube 14. Thus the roller 39, which is ordinarily more than six feet long, does not need to be strong enough to withstand the bending strain exerted by the transfer member 36. A shield 68, Fig. 13, is secured to the leaf member 25 in spaced relation from the bottom side thereof. Small rollers 69 are carried by said shield and positioned between the shield 68 and the leaf member 25. The transfer member 36 extends outwardly from the roller 39 between the bottom side of the transfer leaf 25 and the small rollers 69. The shield 68 prevents the transfer member 36 from being pinched and frictionally bound between the transfer leaf 25 and the bed 21 or support upon which the shield rests. The outer edge of the shield 68 is preferably curved toward the anti-friction rollers 31 and extends a short distance beyond said rollers 31. The shield 68 can be of any desired width but does not need to extend entirely to the hinged edge of the leaf 25. The small rollers 69 support the shield 68 and this shield can be made of light thin material. At the same time these small rollers greatly reduce the friction on the transfer member 36 and the shield 68 protects the bed covers and mattress from abrasion. The outermost small rollers 69 are positioned in opposed relation to the anti-friction rollers 31, so that the transfer member moves between two rolling surfaces at this point of greatest pressure.

When the transfer member 36 is to be used for transferring a patient from the table 13 onto a bed 21 or onto any other support both of the transfer leaves 24 and 25 are raised and placed

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on the bed or other support, see Fig. 5. The transfer member 36 is drawn around the anti-friction rollers 31 and back across the leaves 24 and 25 and across or partially across the table 13. A patient, lying on the table 13, is rolled onto the transfer member 36, the crank 44 is applied to the member 43 at either end of the roller 39 and said roller 39 is rotated to wind in the transfer member 36 and carry the patient easily and smoothly across the table 13 and leaf members 24 and 25 and deliver him onto the bed 21.

In the use of the transfer member 36 the anti-friction rollers 31 operate in the bight of said transfer member 36 and minimize friction at this location. The pull on these rollers 31 is transmitted through the hinge means 26 to the table 13. The roller 39 is mounted in the tube 14 which is a part of the stretcher frame. Thus all reactions, except the tendency to angularly move the leaves 24 and 25 are substantially counter-balanced within the structure of the stretcher. The forces tending to angularly move the transfer leaves 24 and 25 downwardly are expended against the bed 21 or other support. Any forces which might tend to angularly move the transfer leaves 24 and 25 upwardly are borne by two tie members 46 by which the leaves 24 and 25 are held down on the bed 21. The tie members 46 are fastened to the flexible transfer leaf 24 near the outermost corners of said leaf 24 and are adapted to be anchored to parts of the end frames 23 of the bed. The bottom transfer leaf 25 preferably has notches 46', Figs. 2 and 6, to provide clearance for the tie members 46.

The other transfer member 37 is used to transfer a patient from a bed 21 or other support onto the stretcher table 13. This transfer member 37, Fig. 10, passes through a slot 47 into the tubular frame member 15 and is secured to a winding roller 48 similar to roller 39. The roller 48 has bearing members 49 at each end that extend outwardly through, and are guided in slots 50, Fig. 10, in end caps 51 of the tubular frame member 15. The outer end portions of the bearing members 49 are suitably shaped to receive the crank 44. The slots 50 have their longer dimensions extending generally in the line of pull of the transfer member 37. The roller 48 floats in the tube 15 and the transfer member 37 bears against the wall of said tube 15 along a line indicated generally by numeral 52.

When the transfer member 37 is to be used to transfer a patient from a support, such as the bed 21 to the stretcher table 13, the flexible leaf member 24 is preferably placed on the bed and the other leaf member 25 is allowed to hang down as shown in Fig. 4. Preferably the patient is placed on his side near the left edge of the bed, Fig. 4, with his back toward the stretcher. The transfer member 37 is drawn around the anti-friction rollers 34 and across the table 13 and leaf 24 and the edge portion of said transfer member is positioned on the bed close to the patient or may be pushed partially under the patient. The patient is then rolled onto his back and onto the transfer member 37 after which the winding roller 48 is rotated in the proper direction to move the patient across the flexible leaf member 24 onto the stretcher table 13.

When the flexible leaf member 24 is drawn down onto a bed 21 by tensioning the tie members 46, the longitudinally curved edge portion of said flexible leaf 24 will be drawn substantially straight and will be evenly depressed into

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the mattress 27 throughout its entire length, as shown in Fig. 4. If the outer edge portion of this flexible leaf 24 did not have the natural curvature, as shown in Fig. 3, the medial portion of this edge would tend to bow upwardly when tension is exerted on the tie members 46 and it would be more difficult to move a patient onto this leaf 24 and might be uncomfortable for the patient. This condition is obviated by providing the curvature as illustrated in Fig. 3.

Preferably diagonal tie members 53 (Figs. 1 and 4) have their upper end portions connected, as by brackets 54, with the upper portion of the stretcher frame near the outer side thereof. The lower end portions of the tie members 53 are connected, preferably by readily releasable snap or hook members 55 and clamps 56, with the lower portions of the end frames 23 of the bed. The diagonal tie members 53 hold the stretcher down and prevent it from tilting when a pull is exerted on the transfer member 37 to move a patient onto the table 13.

Preferably the stretcher table 13 has a railing 70 provided along the outer side thereof as a safeguard against moving a patient too far in that direction.

Means are provided for holding either the top transfer leaf 24 or both of the transfer leaves 24 and 25 substantially horizontal. This makes it easier to position one or both of said leaves on a bed or other support. Preferably these means are in duplicate, one at each end of the transfer table. One means that can be used for this purpose comprises a cam 57, Figs. 6, 7 and 8, secured to a rod 58 that is slidably and rotatively supported in a guide tube or member 59. Each tube 59 is preferably secured to one of the transverse frame members 16 or 17. Each rod 58 has an operating handle 60 rigid therewith and extending at right angles therefrom. Also each rod 58 preferably has a rigid cross pin 61 that operates in a bayonet slot in one of the tubes 59. Each bayonet slot comprises a longitudinally extending portion 62 and a circumferentially extending portion 63. Each cam 57 has a raised portion 64 thereon that registers with a notch 65 in the edge portion of the leaf member 25. At least one shoulder 66 is provided on the cam 57 alongside of the raised portion 64.

When the cams 57 and rods 58 are not in use they are retracted into a position as shown in Fig. 6. To use a cam 57 for holding both transfer leaves 24 and 25 in a horizontal position the operator manually raises both of said leaves then pushes the cam 57 and rod 58 outwardly into the position in which they are shown in Fig. 8 and then turns the cam 57 into the position shown in Fig. 7. In this position shown in Fig. 7, the shoulders 66 support the lower transfer leaf 25 directly, the upper leaf 24 rests on this lower leaf 25 and the notch 65 provides clearance for the raised portion 64 of the cam. If only the top transfer leaf 24 is to be supported in a raised position then the other transfer leaf 25 is left hanging vertically, the leaf 24 is raised, the cam 57 is moved out past the edge of the leaf 25 and is then angularly moved until the raised portion 64 of said cam is positioned under the leaf 24 and supports the same. The cam 57 at either end of the stretcher can be used to support either the leaf 24 or both leaves 24 and 25.

Preferably each pliable transfer member 36 and 37 is slightly narrower than the transfer leaves 24 and 25. This makes it possible to pass the transfer member 36 underneath the leaf 25

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and yet keep said transfer member clear of the cams 57.

Preferably two outwardly protruding bracket members 67 are secured to the stretcher in such a manner that they will overlap and be in close proximity to the end frames 23 of the bed when the stretcher is properly positioned for moving a patient between the stretcher and the bed. These brackets thus serve to properly position the stretcher relative to the bed.

In moving a patient from a bed onto the stretcher table 13, the transfer member 37 is drawn over the table 13 and leaf 24 and out onto the bed. Also the patient is moved onto the transfer member 37, usually by rolling him onto said member 37 as previously described, and the transfer member 37 with the patient thereon is then wound on the roller 48 until the patient is properly positioned on the table 13. The transfer leaf 24 is flexible enough so that it will yield and conform, to a certain extent, to the shape of the body as the patient is being moved over the edge of said transfer leaf 24 and onto said leaf. This flexibility of the leaf 24 thus makes it easier to move a patient onto said leaf 24 and minimizes the danger of inflicting injury or causing discomfort to the patient in this transfer operation.

When the patient is to be transferred from the table 13 to some other support he is rolled onto the transfer member 36 and the roller 39 is rotated in the proper direction to move the patient off of the table 13 and across the transfer leaves 24 and 25 and deliver the patient onto the bed or other support.

It is to be noted that when my wheeled stretcher is used as hereinbefore described, a patient is not rolled from a table onto a bed or from a bed onto a table with the possibility that the two supports may be at a different level and injury may result to the patient, but the patient is merely rolled over on the level surface on which he is lying to get him onto a pliable transfer member after which he is carried on the transfer member from one support to the other.

Obviously if desired a patient can be moved from a bed or like support over both of the transfer leaves 24 and 25. When this is done the benefits arising from the flexibility of the transfer leaf 25 are sacrificed. However, this mode of operation makes it possible to use the transfer member 37 in overlapping relation as respects the transfer member 36. For instance the transfer member 36 can be spread across the leaves 24 and 25 and the transfer member 37 with a patient thereon can be slidably moved on the transfer member 36 leaving the patient resting on the transfer table 13 with both transfer members under him. Then the patient can be transferred off of the table by merely winding in the transfer member 36. This obviates rolling the patient around on the stretcher table to get him onto the pliable transfer member 36.

Obviously, changes can be made in the forms, dimensions and arrangements of the parts of my invention, without departing from the principles thereof, the above setting forth only preferred forms of embodiments of my invention.

I claim:

1. A stretcher comprising a table adapted to support a patient in a horizontal position; a transfer leaf hinged to one edge portion of said table and adapted to be positioned on a support substantially flush with and alongside of said table; a pliable transfer member movable over said leaf and said table for transferring a

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patient between said table and said support; a longitudinally extending tube carried by said table and having a slot through which said pliable transfer member passes; a roller within said tube connected with said pliable transfer member for winding of said pliable transfer member on said roller; and means for rotating said roller.

2. A stretcher comprising a table adapted to support a patient; a transfer leaf hinged to one edge portion of said table and adapted to be positioned on a support substantially flush with and alongside of said table; a pliable transfer member movable over said leaf and said table for transferring a patient between said table and said support; a longitudinally extending tube carried by said table and having a slot through which said pliable transfer member passes; a roller within said tube connected with said pliable transfer member for winding said pliable transfer member on said roller; radial slots in the end portions of said tube; bearing members on said roller extending outwardly through said slots and guided in said slots for radial movement of said roller in said tube, whereby portions of the flexible member that are wound on said roller will be caused to engage with and bear against the inner surface of said tube; and means for rotating said roller to wind said pliable transfer member thereon.

3. A stretcher comprising a table adapted to support a patient in a horizontal position; a relatively thin flexible transfer leaf hinged to one edge portion of said table and adapted to have its free end portion positioned on a support substantially flush with and alongside of said table; a pliable transfer member having a free end portion positioned on said transfer leaf and movable over said flexible transfer leaf and onto said table for transferring a patient between said support and said table; and means carried by said stretcher for moving said transfer member onto said table.

4. The apparatus of claim 3 wherein the outer edge portion of said flexible leaf is curved concavo-convexly and has its convex side toward the bed; and hold down means connected with each end portion of said flexible leaf adjacent the outermost corner thereof to hold said leaf down on the bed with its normally curved outer edge substantially straight.

5. A stretcher comprising a table adapted to support a patient; a transfer leaf hinged to one edge portion of said table and adapted to be positioned on a support substantially flush with and alongside of said table; anti-friction roller means rotatively mounted in the outer edge portion of said transfer leaf; two pliable transfer members movable across said table and said transfer leaf in opposite directions one of said pliable transfer members being doubled and passed around said anti-friction roller means at the outer edge portion of said transfer leaf; and independent means carried by the stretcher for moving each pliable transfer member.

6. A stretcher comprising a table adapted to support a patient; a non-flexible transfer leaf; a flexible transfer leaf; a common hinge means connecting said two transfer leaves with one edge portion of said table for movement between a substantially vertical and a substantially horizontal position, the flexible transfer leaf being uppermost when the two leaves are horizontal; two pliable transfer members movable across said table and said transfer leaves in opposite directions, one of said transfer members being doubled

around the outer edge portion of said non-flexible transfer leaf; and independent means for moving each transfer member.

7. A stretcher comprising a table adapted to support a patient; a non-flexible transfer leaf; a flexible transfer leaf; a common hinge means connecting said two transfer leaves with one edge portion of said table for movement between a substantially vertical and a substantially horizontal position, the flexible transfer leaf being uppermost when the two leaves are horizontal; two pliable transfer members movable across said table and said transfer leaves in opposite directions, one of said transfer members being doubled around the outer edge portion of said non-flexible transfer leaf; anti-friction roller means carrying said pliable transfer member around said outer edge portion of said non-flexible transfer leaf; a winding roller positioned under said table adjacent said hinge means and connected with the pliable transfer member that passes around said anti-friction roller means; and another winding roller connected with the other pliable transfer member and positioned adjacent the edge of said table remote from said hinge means.

8. A stretcher comprising a table adapted to support a patient; a transfer leaf hinged to one edge portion of said table and adapted to be positioned on a support substantially flush with and alongside of said table; anti-friction roller means rotatively mounted in the outer edge portion of said transfer leaf; a pliable transfer member extending across said table and said transfer leaf and around said anti-friction rollers; and a longitudinally extending winding roller positioned under said table adjacent the hinged edge of said transfer leaf, said pliable transfer member being connected with said winding roller, whereby rotation of said winding roller will move said pliable transfer member across said transfer leaf and said table.

9. A stretcher comprising a table adapted to support a patient; a transfer leaf hinged to one edge portion of said table and adapted to be positioned on a support substantially flush with and alongside of said table; a winding roller rotatively supported underneath said table; means for rotating said winding roller; anti-friction roller means rotatively supported at the edge portion of said table opposite said transfer leaf; and a pliable transfer member secured to and wound on said winding roller and extending around said anti-friction roller means and across said table and said transfer leaf.

10. A stretcher comprising a table adapted to support a patient; a transfer leaf hinged to one edge portion of said table and adapted to be positioned on a support substantially flush with and alongside of said table; a winding roller rotatively supported underneath said table; means for rotating said winding roller; anti-friction roller means rotatively supported at the outer edge portion of said leaf; a shield carried by said transfer leaf and spaced from the under side thereof and extending substantially from end to end of said leaf and from the outer edge of said leaf toward the hinged edge thereof; spacer rollers supporting said shield in spaced relation from said leaf; and a pliable transfer member wound on said winding roller and passing between said spacer rollers and said leaf and adapted to extend around

said anti-friction roller means and back across said leaf and said stretcher table.

11. A stretcher comprising a table adapted to support a patient in a horizontal position; transfer leaf means hinged to one edge portion of said table and adapted to have its free end portion positioned on a support substantially flush with and alongside of said table; a pliable transfer means having a free end portion positioned on said transfer leaf and movable over said leaf means and onto said table for transferring a patient between said support and said table; a second pliable transfer means having a free end portion positioned on said table and movable over said table and over said leaf means and onto said support for transferring a patient between said table and said support; and means carried by said stretcher for moving each of said transfer means.

12. The combination of claim 11 wherein the transfer leaf means comprises two independently operable transfer leaves, the lower one of which is provided with anti-friction rollers at its free end portion over which one transfer means travels and the upper one comprises a superposed and relatively thin flexible transfer leaf.

13. A stretcher comprising a table adapted to support a patient in a horizontal position; transfer leaf means hinged to one portion of said table and adapted to have its free end portion positioned on a support substantially flush with and alongside of said table; roller means carried by the free end portion of said transfer means for supporting thereon a travelling transfer means; a pliable transfer means mounted on said rollers and movable to transfer a patient between said table and said support; anti-friction means disposed below said transfer means to prevent frictional contact between the transfer means and the support; and means carried by said stretcher for moving said transfer means toward said support.

14. A stretcher comprising a table adapted to support a patient in a horizontal position; a transfer leaf hinged to one edge portion of said table and adapted to have its free end portion positioned on a support substantially flush with and alongside of said table; a pliable transfer member having a free end portion positioned on said transfer leaf and movable over said transfer leaf and onto said table for transferring a patient between said support and said table; and means carried by said stretcher for moving said transfer member onto said table.

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